

C. Remarks

The claims are 4, 5, 9, and 16, with claims 4 and 5 being independent. Claims 1, 2, and 25-27 have been cancelled without prejudice or disclaimer. No new matter has been added. Reconsideration of the claims is respectfully requested.

Claims 1, 2, 4, 5, 9, 16, and 25-27 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent Application Publication No. 2004/0070643 A1 (Kubota) in view of U.S. Patent No. U.S. Patent No. 6,461,798 (Ohkuma). These claims also stand rejected under the judicially created doctrine of obviousness-type double patenting over the claims that issued in Kubota (U.S. Patent No. 6,951,380 B2) in view of Ohkuma. The grounds of rejection are respectfully traversed.

Initially, Applicants note that it is clear legal error to reject claims under 35 U.S.C. § 102(b) using a combination of references. Applicants presume that the Examiner intended to reject the claims under 35 U.S.C. § 103(a). This rejection is, therefore, addressed accordingly.

Prior to addressing the merits of rejection, Applicants would like to briefly review some of the features of the presently claimed invention. That invention, in pertinent part, is related to a method for manufacturing a liquid discharge head with a liquid passage. This method includes a step of providing a first polymethyl isopropenyl ketone (PMIPK) layer, and a step of providing, on the first layer, a second layer including a photosensitive material of a copolymer obtained by copolymerization of a methacrylate and a methacrylic acid or anhydride (PMMA). The desired pattern from the second layer is formed by exposing a part of the second layer and removing the exposed part using a developing

solution. The desired pattern from the first layer is formed by exposing a part of the first layer and removing the exposed part using a developing solution. Then, a coating layer is provided to coat the mold, and the mold is finally removed to form the liquid passage.

Kubota is related to a method of manufacturing a microstructure and a liquid discharge head. As the Examiner correctly recognized, Kubota discloses forming PMIPK and PMMA layers in the opposite arrangement from that presently claimed. The Examiner, however, has now relied on Ohkuma for a teaching that a polymethyl isopropenyl ketone layer can be used as a first photosensitive layer in the process of forming an ink jet head and that a second acrylic resin layer can be formed and patterned above the polymethyl isopropenyl ketone layer. The Examiner alleged that it would have been obvious to one of ordinary skill in the art that the first and second photosensitive layers of Kubota could be switched, as suggested by Ohkuma, because Ohkuma teaches that forming the layers in this order allows for an ink pathway to be formed efficiently and without deformation. Applicants respectfully disagree.

First, Applicants respectfully submit that Ohkuma does not suggest that there is any benefit in reversing the arrangement of layers in Kubota. Ohkuma teaches forming a mold for a flow path from a single PMIPK layer, rather than a combination of PMIPK and PMMA layers as in the present invention or in Kubota. The acrylate coating in Ohkuma, to which the Examiner referred in the Office Action, forms the wall of the liquid passage in the liquid ejection head. It is not a part of the mold, which is removed at the end of the process to form a liquid passage, and represents a component corresponding to item 34 in Fig. 2C of Kubota. In essence, Ohkuma does not at all suggest that placing the

PMIPK layer first can prevent ink pathway deformation. At most, it suggest the use of the PMIPK layer in forming the mold can improve ink pathway formation. This is a feature already disclosed in Kubota.

Second, Applicants respectfully submit that even if assumed, *arguendo*, that the Examiner successfully set forth a case of prima facie obviousness (i.e., that Ohkuma does suggest reversing the layers in Kubota as alleged), the data provided in the present application in the Examples and the Comparative Examples rebuts this case by demonstrating that forming the layers as presently claimed provides unexpectedly superior results.

As is apparent from the results shown in Table 1 (page 69), in the ink-jet heads manufactured in accordance the present invention, no film reduction, cracking, or residue was found in the mold material, and both the nozzle yield and the printing yield were preferable. However, in Comparative Examples 1 and 3, where the layers were reversed, a reduction in sensitivity and cracking, as well as residue, were observed. Also, in terms of both the nozzle yield and the printing yield, the nozzles in the Comparative Examples were poorer than those manufactured in accordance with the present invention. Neither Kubota nor Ohkuma suggests that the arrangement of the layers as claimed could lead to such improvements.

In sum, the unexpectedly superior results shown by the comparative data in the present application rebut any presumption that it would have been obvious to reverse the first and second layers in Kubota in view of Ohkuma as alleged by the Examiner. Therefore, the presently claimed invention is patentable over Kubota and Ohkuma. For the

same reasons, the present claims are not a double patenting of the claims as issued in Kubota.

Wherefore, withdrawal of the outstanding rejections and passage of the application to issue are respectfully requested.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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